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ABSTRACT

Cincinnati's school district has developed a computerized School Information System (SIS) to provide decision-makers with essential information. The system serves all 102 elementary, junior high and senior high schools in the district and currently gathers data at the school level, focusing primarily upon the instructional program dimension; extension to smaller organizational units and other program areas such as budgeting and scheduling is planned for the future. A Hewlett-Packard 2000 C unit with 64K of memory is employed and storage for the time-shared environment is via a 2314 tape disc. For each school information is gathered on pupils, school attendance, physical plant, and certificated staff; 11 different reports are routinely generated. The system has been judged successful in terms of its ability to support planning, evaluation and accountability and local money has replaced the original Elementary and Secondary Education Act Title III funding. However, additional funds are needed and district personnel will require more training in order to derive maximum benefit from SIS. (PB)

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A BRIEF DESCRIPTION OF THE SCHOOL INFORMATION SYSTEM OF THE CINCINNATI PUBLIC SCHOOLS

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Cincinnati Public Schools

INTRODUCTION

In May of 1970 the Cincinnati Public Schools, Cincinnati, Ohio, received a Title III grant for the purpose of developing and implementing a School Information System (SIS) for the school district. The overarching rationale or strategy for this endeavor was the belief that when decision makers are provided with relevant, timely, reliable, and valid information; and when it is presented in an easy to read fashion, they are better able to make rational decisions than when such information is not available. The seven basic goals of the project are: (1) To develop a school evaluation and management model using system concepts. (2) To gather data on school unit variables "most likely" influencing the effective operation of the Cincinnati Public Schools. (3) To construct a longitudinal school unit data bank and information sytem. (4) To analyze data for parsimony, descriptiveness, and prediction of school output. (5) To report data and information meaningfully to decision makers so they can more effectively carry out the decision-making process. (6) To develop, administer, analyze, and report the student, teacher, parent, and administrator surveys. (7) To provide in-service training sessions for decision makers so they can understand and utilize this information system.

In the above paragraph an attempt was made to give the reader an idea of the rationale for the system and what it is endeavoring to accomplish. The remaining sections of this document will address themselves to the five major sections of this report. They are: (1) Background and Direction of the System, (2) Hardware Configurations, (3) Data Collection, (4) Data Resources, and (5) Information Reporting.

MAJOR COMPONENTS OF THE SYSTEM

Background and Direction of the System.

At the present time I have a staff of seven plus myself. With respect to the system, it works within and services the 102 schools comprising the Cincinnati Public School District. In other words, the system services all seventy-five elementary schools, all nineteen junior high schools, and eight senior high schools. The entire system's effort is channeled in the direction

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IR 000 189

of the school as the basic unit of data aggregation. In other words, data and information is delineated, gathered, analyzed, and reported at this organizational level and services only those decisions makers (i.e., principals, supervisors, directors. assistant superintendents, superintendent, and the Board itself) involved in decisions affecting school units. Further, the system is in no way attempting to evaluate, manage, collect, or report data or information relating to particular students, particular classes of students, particular teachers, or administrators in the Cincinnati Public Schools. The system's primary focus is toward the school as a whole. As more is learned about educational management and evaluation systems, their application in education, when resources; financial and human, become available, and as this particular system becomes operational, however, there is every intention of working toward and within each of the other levels of school organization.

Another characteristic of the system should also be made known before continuing. The primary focus of this system is to deal with and serve as an information foundation to the educational program dimension and not to support the maintenance (e.g., budget, salary, scheduling, etc.) dimensions connected with the educational setting. At the present, we do not see ourselves servicing as a data crib to operationalize a Planning Program Budgeting System (PPBS), a performance contracting system, or a cost/effectiveness system. This will come, but only after this basic system is first operationalized. To reiterate, we are at the present -- and for the next year -- interested in serving educational decision makers whose responsibility is to contribute to the running of a school. And further, to assist these individuals by providing them with relevant, timely, valid, and objective information on those educational variables that have a significant impact on positively changing the behavior of students.

More specifically, in terms of a system's framework, what the system is endeavoring to do is delineate information needs, gather and analyze data to meet these needs, and to generate and report information to decision makers for the planning and controlling the educational change process at the school unit level. Operationally speaking, to accomplish these purposes, SIS is lending itself to identifying, analyzing, and quantifying the relationships between all inputs going into a school and educational outcomes (i.e., only those goals or objectives relating to the educand). Further, SIS is allowing for determining the combination of contributing factors which will maximize the educational outputs. Finally, the system is developed in such a way that it lends itself to the information reporting task. This is of necessity in order that local school decision-makers can get the information when they need it and in a most easily understood manner.

Hardware Configurations

With respect to some of the more salient characteristics of our present hardware configuration, these include the use of an H.P. 2000C unit having a 64K CORE memory. Storage for the time-shared environment is a 2314 tape disc with 23.5m bytes. Off-line storage is done on 800 bpi-9 track magnetic tape or punched or mark sense cards. All reports are produced in a time-shared environment using either terminal for short reports or line printer for longer reports. Data input is via terminals and/or cards with the majority of cards either being punched or mark sensed.

Data Collection

The following is a brief alphabetical list of the data collected by SIS. In general, the reports cover each regular school (under the Cincinnati Board of Education) from 1965-66 through the most recent academic year. The reader can assume that absolute numbers are available for all variables--as well as percentages and district averages wherever appropriate. For detail, see the Definition of Variables Booklet produced by SIS.1

General Categories	Specific Data (include numbers and percents)
I. PUPILS	
A. Absence and Attendance (average daily rates)	by total, sex, grade, special education.
B. Attitude (based on Student Survey)	by responses to each question, with factors and with goal statements from 1971-72.
C. Membership	by total, sex, grade, special education.
D. Mobility	by grades with new enrollment, transfers-in, transfers-out, external transfers, dropouts.
E. Promotion	by total, sex, and grade.
F. Pupil-Teacher Ratio	by total and grade.
G. Referrals	by attendance and psychological.
H. Tests--Academic Achievements	with percentiles and normal ranges.
1. Iowa Basic Skills (Grade 4)	by total and subtests (vocabulary, reading composition, language, skills, and arithmetic).
2. Metropolitan--Advanced English (Grade 8)	by subtests (language, word knowledge, reading, spelling).
3. Metropolitan--Advanced Math (Grade 8)	by subtests (problem solving, computation, concepts).
4. Metropolitan--Advanced Intermediate (Grade 9)	by subtests (language, word knowledge, reading, spelling, arithmetic computation, and concepts and problem solving).
5. Metropolitan--Primary and Intermediate (Grades 3 and 6).	by subtests (reading, word knowledge, word analysis, arithmetic computation, and concepts and problem solving).

1 Barbadora, Bernard M., Definition of Variables, Cincinnati Public Schools, Cincinnati, Ohio, Division of Research and Development. September, 1972, pp. 1-17.

	6. Stanford Achievement (SAT)--Elementary	by grade (2, 5, 6), subtests (word, paragraph meaning, arithmetic computation and concepts and application).
	7. SAT--Secondary	by grade (8, 10-12) and subtests (language paragraph meaning, arithmetic computation).
I.	Tests--Physical Achievement	by 5 classes of maturity and for several skills and participation.
J.	Tests--Academic Aptitude	
	1. Kuhlman-Anderson	by percentile.
	2. Lorge-Thorndike	by percentile.
	3. School and College	by total and subtest (verbal, mathmatics) with percentile.
II.	SCHOOL ATTENDANCE AREA	
	A. Attitude (based on parent survey)	by responses to each question, with factors and with goal statements for 1971-72.
	B. Delinquency	by glass breakage, contract and work orders, lights broken, juvenile arrests.
	C. Land and Density	by general acreage, residential acreage, persons per acre, dwelling.
	D. PTA Membership	
	E. Population	by over 5 years of age, employed, in school.
	F. Voting	by registration--with vote on school issues.
	G. Wealth	by students receiving subsidized lunches and children above low income.
III.	SCHOOL PLANT	by age of building and play area (in 1,000's sq. ft.).
IV.	STAFF--CERTIFICATED	
	A. Absence and Attendance	by total and reasons for absence.
	B. Attitude (based on Teacher Survey)	by responses to each question, with factors and with goal statements for 1971-72.
	C. Experience	by average age, average years teaching in District, average years total teaching, various contracts--no degree, BA, or MA.
	D. Number	by total, assistant principals, principals, counselors, etc.
	E. Miscellaneous	by nonwhite, women, turnover.

Data Resources

Very little data with the exception of the Student, Teacher, Parent, and Administrator Surveys are collected denovo. Therefore, SIS relies on many individuals, departments, and agencies for the "original" collection of data. The following is a list of both intra-system and outside systems contacted for the inputting of data into SIS. INTRA-SYSTEM SOURCES: Office of the Clerk-Treasurer; Office of the Superintendent; Division of Research and Development; Division of Research, Statistics, and Information; Division of School-Community Relations; Department of Educational Program; Evaluation Services; Health and Physical Education; Educational Opportunities Services; Staff Personnel; Elementary Schools; Pupil Adjustment and Attendance Services; Psychological Services; Department of Business Administration; Food Services; and Department of Planning. OUTSIDE SYSTEM SOURCES: Hamilton County Board of Elections, Cincinnati Police Records -- Regional Computer Center, City Planning, Chamber of Commerce, and Ohio-Kentucky-Indiana Regional Planning Authority.

Information Reporting

Essentially the School Information System produces eleven major reports. By title they are: Exceptional Characteristics Report, School Variable Printout, School Variable Stanine, School Factor Stanine, Student Survey, Teacher Survey, Parent Survey, Administrator Survey, Goal Survey, Achievement Forecast Report, and Trend Report. Specific characteristics and uses of each of these documents will now be elaborated upon. The reader may obtain copies of the report formats from the author.

1. Title: Exceptional Characteristics (1-5 pages)

Contents: Positive (i.e., correlated positively with student achievement variables), negative, and neutral data--when they are above or below the middle two-thirds of District schools at the same level. For example, a listing for one of the 75 elementary schools would mean that school was among the top or bottom dozen elementary schools on that particular variable.

Uses: As quick identification of major strengths and weaknesses, brief guideline for goal development or needs assessment, summary of highlights for report 2 (below).

2. Title: Variable Printout (16 pages)

Contents: Variables are printed in raw score, percent, direction (i.e., + or - depending on correlation with student achievement), district-wide comparison, and normal range (one standard deviation) for several hundred variables in the SIS data bank.

Uses: Basic data on school's inputs and outputs, backup detail for all other more abbreviated reports.

3. Title: Factor Stanine Profile (1 page)

Contents: Twenty major input and output factors (i.e., clusters of variables) with direction as well as stanine and percentile rankings.

Uses: Global snapshot of a school, summarized version of #4 below.

4. Title: Variable Stanine Profile (16 pages)

Contents: Direction, stanine, and percentile for most of SIS's variab

Uses: Quick picture of how one school compares with others in the District, backup for report 3.

5. Title: Student Survey (1 page)

Contents: Percent of agree, disagree, and undecided responses to 30 questionnaire items. Taken by all sixth, ninth, and twelfth graders.

Uses: Assessment of student attitudes, confirmation or refutation of other data on students.

6. Title: Teacher Survey (2 pages)

Contents: Actual and averaged responses to 50 questionnaire items. Taken by all teachers.

Uses: Assessment of teacher attitudes, basis for staff meetings, offers direction for change.

7. Title: Parent Survey (1 page)

Contents: Percent of yes, no, and undecided responses to 22 questionnaire items. Taken by a large sample of the parents for each school.

Uses: Assessment of parent sentiments, basis for P.T.A. discussion.

8. Title: Goal Survey (1 page)

Contents: Percent of top selections from eleven goal statements put to school administrators and to the above survey populations.

Uses: Note emphases of the various groups, compare groups, review program priorities. To determine amount of agreement parents, students, and teachers have regarding need areas of the school.

9. Title: Achievement Forecast (2 pages)

Contents: Graphical comparison between a school's "predicted" achievement (based on a variety of input variables) and the school's actual achievement (i.e., achievement test results) in reading and mathematics.

Uses: Evaluation of a school's success--in terms of its resources, needs assessment.

10. Title: Trend Report (4-8 pages)

Contents: Values for selected variables are graphed over the past five school years.

Uses: Find patterns, better predict what will happen next year, historical background of school. Seek out trends in data. More accurately predicting what the future has in store. Past history of the school.

EVALUATION OF THE PRESENT SYSTEM

Regarding some of the positive characteristics of the system, it would be fair to say the project was deemed worthy enough to be continued with local funds, the system does provide for immediate access and retrieval of data in order to support the educational planning process, thus far it has proved to be an excellent mechanism for goal setting, problem identification, and needs analysis. Further, it has proved itself valuable for product evaluation--determining the congruence between outcomes and objectives. Finally, it is seen as a vital support mechanism for both an educational accountability sub-system as well as a planning program budgeting system.

On the negative side of the ledger, the major problems encountered thus far include complete acceptance on the part of all principals to use the system, more training on the part of administrators so that they can more fully understand and better utilize the system, and greater financial support is definitely needed if this system is to fully operationalize a pupil information system--this represents the next logical step of our present system and this is the reason it is noted here.

CONCLUSION

In conclusion, an attempt was made to give a quick overview of the Cincinnati Public Schools' School Information System. Specifically, it was stated that the overall goal of the system was to provide data and information to decision makers for the purpose of more enlightened decision making. The paper addressed itself to the major components of the system and they were: its hardware configuration; where, what, and how data is collected and reported; and examples of how the data is reported. Finally, a brief evaluative testimonial of the system was given.